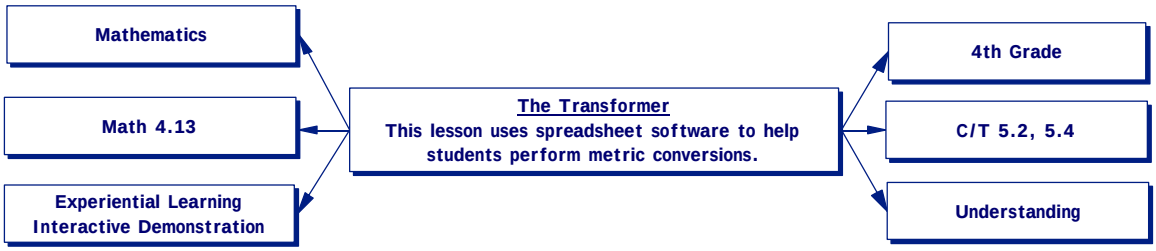

The Transformer
or
How Can You Change Inches Into Centimeters Without a Magic Wand?

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Curriculum Area	Mathematics
Subject Area	Measurement
Grade Level	4th grade
Learning Objectives	• The student will measure length in inches. • The student will estimate the conversion of inches to centimeters. • The student will compare student estimate to actual conversion.
Correlation to the SOL	Math 4.13 C/T 5.2, 5.4
Video/Technology Hardware/Software Needed	**For class:** Computer Computer Projection System Spreadsheet software (such as *Microsoft Works* or *ClarisWorks*) **For each student:** Computer attached to a printer Spreadsheet software (such as *Microsoft Works* or *ClarisWorks*)
Materials Required	**For each student:** Ruler with inch units Paper
Procedures/Activities	1. Have students make a chart on their paper with three columns: ***Item, Length in Inches, Estimate (CM)***. 2. Give students a ruler and have them measure the length of a variety of items in the classroom (pencil, paper, book, desktop, etc.) in inches. They should record their measurements on the chart.

	3. Discuss the use of metric measurements. Review metric measurements of length. Remind students that a centimeter is approximately the width of their index finger. Let them study a centimeter on their ruler, if the rulers have that unit also. 4. Have students estimate the length, in centimeters, of the items that they measured and record their estimate on the chart. 5. Tell students that there is a computer tool (spreadsheet) that they can use to help them verify their estimates. 6. Work with students to create a spreadsheet entitled "The Transformer." (Use the computer projection system to project the spreadsheet as it is being constructed for visual reinforcement.) Be sure to use and reinforce the correct terminology for the parts of the spreadsheet (column, row, grid, cell). Include the following columns: A: Item; B: Length (In); C: Estimate (cm); D: Actual Length (cm). Include a formula in column D (=B1*2.54). 7. Input some sample data to demonstrate how the spreadsheet works with a formula, especially if students have not been exposed to formulas before. 8. Distribute copies of the group's Transformer to each student via network or floppy disk. 9. Students input the information from their charts into the database and compare their estimates of metric length with the computer's calculation of actual lengths. 10. As a group, discuss how close estimates were to the actual. Have students give explanations for the differences.
Content Assessment	Students will be quizzed on their ability to estimate the length of given items in centimeters.
Technology Integration Assessment	Printouts of each student's spreadsheet with data included will be added to their portfolio.
Extensions	**Math:** Repeat lesson with other units of measurement, and allow students to add the formula. **Science:** Use "Transformer" spreadsheet to convert measurements for a science experiment/activity.